

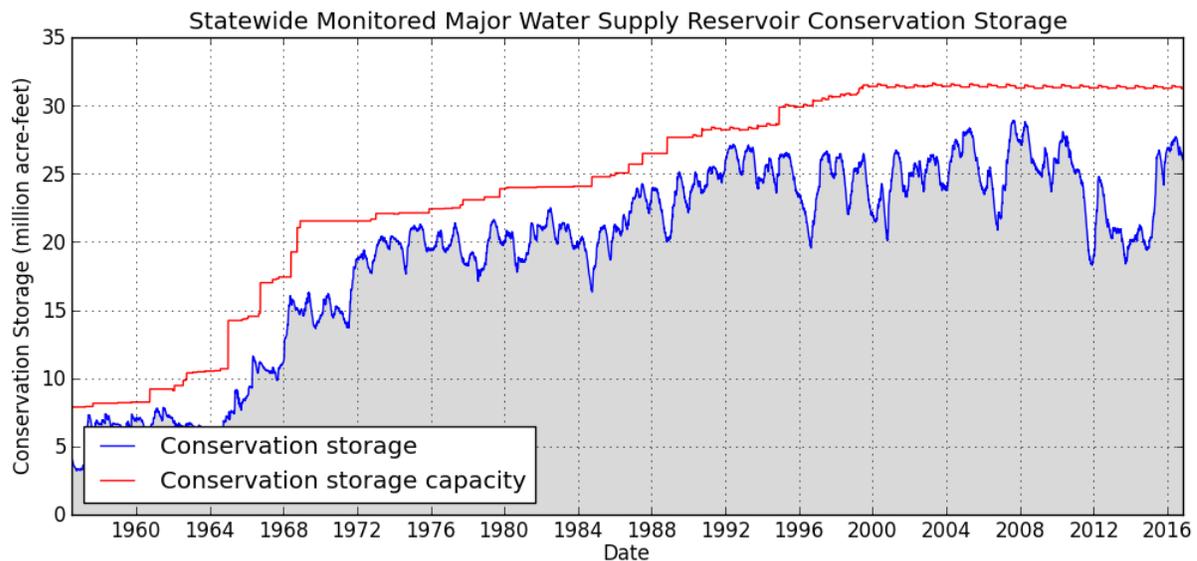
OCTOBER 2016 RESERVOIR STORAGE*

At the end of the month, total conservation storage in 114 of the state's major water supply reservoirs was at 26 million acre-feet or 83% of total conservation storage capacity. This is approximately 0.49 million acre-feet less than a month ago but 0.58 million acre-feet more than the storage at this time last year.

Twenty-four (24) reservoirs held 100% of conservation storage capacity, primarily in the North Central (15) and East (4) regions. One (1) reservoir, Palo Duro (2%), remained below 10% full.

Total combined storage was at or above normal (storage \geq 70%) in the South Central (98%), Upper Coast (95%), North Central (95%), East (91%), Trans-Pecos (83%), and Low Rolling Plains (77%) regions. The region with the lowest percentage of storage was the High Plains (21%) region. Overall, storage increased in three regions but declined in six regions over the past month.

Elephant Butte reservoir held 128,628 acre-feet or 7% of storage capacity. This is 3,140 acre-feet less than a month ago.



* Storage is based on end-of-the-month data in 114 major reservoirs that represent 96% of the total conservation storage capacity of 188 major water supply reservoirs in Texas. Major reservoirs are defined as having a conservation storage capacity of 5,000 acre-feet or greater. Only the Texas share of storage in border reservoirs is counted.

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	Conservation Storage Capacity (acre-feet)	Conservation Storage end of October 2016		Change since end of September 2016		Change since end of October 2015		
		(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)	
HIGH PLAINS								
Palo Duro Reservoir	61,066	1,261	2	-184	-0	-1,967	-3	
Meredith, Lake (Texas)	500,000	118,237	24	-1,255	-0	-3,779	-1	
Meredith, Lake (Texas & Oklahoma)	779,556	118,237	15	-1,255	-0	-3,779	-0	
MacKenzie Reservoir	46,450	7,026	15	-137	-0	-610	-1	
White River Lake	29,880	7,467	25	-345	-1	-2,432	-8	
TOTAL	637,396	133,991	21	-1,921	-0	-8,788	-1	
LOW ROLLING PLAINS								
Greenbelt Lake	59,968	16,233	27	-375	-1	3,007	5	
N. Fork Buffalo Crk Reservoir	15,400	12,677	82	865	6	1,833	12	
Kemp, Lake	245,307	238,923	97	4,356	2	61,960	25	
Millers Creek Reservoir	26,768	26,768	100	0	0	3,123	12	
Alan Henry Reservoir	94,808	86,214	91	-2,068	-2	-4,589	-5	
Stamford, Lake	51,570	49,414	96	-2,105	-4	6,079	12	
J B Thomas, Lake	199,931	123,299	62	-3,521	-2	-24,371	-12	
Fort Phantom Hill, Lake	70,030	68,203	97	-1,827	-3	16,534	24	
Sweetwater, Lake	12,267	2,536	21	-96	-1	1,190	10	
Colorado City, Lake	30,758	7,864	26	-167	-1	-922	-3	
Champion Creek Reservoir	41,580	11,774	28	50	0	2,553	6	
Abilene, Lake	7,900	7,686	97	-214	-3	7,042	89	
Coleman, Lake	38,075	35,642	94	-710	-2	9,832	26	
Hords Creek Lake	8,443	6,937	82	-273	-3	3,760	45	
TOTAL	902,805	694,170	77	-6,085	-1	87,031	10	
NORTH CENTRAL								
Nocona, Lake (Farmers Crk)	21,444	19,732	92	-156	-1	-1,007	-5	
Hubert H Moss Lake	24,058	21,967	91	-72	-0	-2,091	-9	
Texoma, Lake (Texas)	1,258,113	1,258,113	100	18,557	1	68,225	5	
Texoma, Lake (Texas & Oklahoma)	2,525,281	1,258,113	50	18,557	1	68,225	3	
*Pat Mayse Lake	113,683	102,655	90	-3,131	-3	no data		
Kickapoo, Lake	86,345	79,808	92	-2,317	-3	1,671	2	
Arrowhead, Lake	230,359	219,202	95	3,091	1	5,739	2	
Bonham, Lake	11,027	8,308	75	-543	-5	-439	-4	
Crook, Lake	9,195	7,798	85	-283	-3	-30	-0	
Amon G Carter, Lake	19,266	19,266	100	0	0	0	0	
Ray Roberts, Lake	788,167	771,827	98	-5,045	-1	-16,340	-2	
Jim Chapman Lake (Cooper)	260,332	210,983	81	-10,530	-4	-49,349	-19	
Graham, Lake	45,288	45,165	100	-123	-0	3,203	7	
*Lost Creek Reservoir	11,950	11,870	99	34	0	-80	-1	
Bridgeport, Lake	366,236	366,236	100	0	0	31,633	9	
Lewisville Lake	563,228	546,085	97	-4,791	-1	-17,143	-3	
Lavon Lake	406,388	334,173	82	-18,441	-5	-15,785	-4	
Hubbard Creek Reservoir	318,067	295,862	93	142	0	181,560	57	
Possum Kingdom Lake	523,873	523,384	100	6,999	1	-489	-0	
*Mineral Wells, Lake	6,760	6,760	100	0	0	0	0	
Weatherford, Lake	17,812	17,017	96	-405	-2	2,945	17	
Eagle Mountain Lake	179,880	179,880	100	1,119	1	11,342	6	
Worth, Lake	33,495	30,525	91	-333	-1	365	1	
Grapevine Lake	164,703	164,703	100	0	0	0	0	
Ray Hubbard, Lake	452,040	425,304	94	-9,003	-2	-26,529	-6	
New Terrell City Lake	8,583	8,179	95	33	0	-404	-5	
Palo Pinto, Lake	26,766	25,018	93	-64	-0	-300	-1	
Benbrook Lake	85,648	72,629	85	-4,792	-6	3,695	4	
Arlington, Lake	40,188	26,276	65	-2,037	-5	-13,912	-35	
Joe Pool Lake	175,358	165,674	94	-2,378	-1	-9,684	-6	
*Cisco, Lake	25,895	25,895	100	0	0	8,097	31	

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	Conservation Storage Capacity (acre-feet)	Conservation Storage end of October 2016		Change since end of September 2016		Change since end of October 2015		
		(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)	
<i>(North Central continued)</i>								
Leon, Lake	27,762	23,618	85	-408	-1	-4,144	-15	
Granbury, Lake	125,756	125,680	100	910	1	1,741	1	
Pat Cleburne, Lake	26,008	22,263	86	-690	-3	-3,745	-14	
Waxahachie, Lake	10,780	9,862	91	-310	-3	-918	-9	
Bardwell Lake	46,122	44,101	96	-1,333	-3	-2,021	-4	
Proctor Lake	54,762	49,082	90	-1,464	-3	-1,866	-3	
Whitney, Lake	553,344	498,966	90	9,473	2	-54,378	-10	
Aquilla Lake	43,243	41,473	96	-1,770	-4	-1,770	-4	
Navarro Mills Lake	49,827	48,424	97	-1,403	-3	-1,403	-3	
*Halbert, Lake	6,033	4,708	78	-248	-4	-1,325	-22	
Richland-Chambers Reservoir	1,087,839	1,043,761	96	-26,165	-2	-44,078	-4	
*Brownwood, Lake	128,839	118,914	92	-2,556	-2	3,570	3	
Waco, Lake	189,418	184,671	97	-3,372	-2	-4,747	-3	
Limestone, Lake	203,780	183,296	90	-7,406	-4	-20,484	-10	
Belton Lake	435,225	434,861	100	-364	-0	-364	-0	
Stillhouse Hollow Lake	227,771	227,771	100	0	0	0	0	
Georgetown, Lake	36,823	33,000	90	-3,045	-8	3,376	9	
Granger Lake	51,822	51,822	100	0	0	0	0	
Tawakoni, Lake	871,685	786,076	90	-18,567	-2	-85,609	-10	
Mountain Creek, Lake	22,850	22,850	100	0	0	0	0	
Squaw Creek, Lake	151,250	151,250	100	0	0	0	0	
TOTAL	10,625,086	10,096,743	95	-93,187	-1	-53,272	-1	
EAST								
Wright Patman Lake	135,069	135,069	100	-96,427	-71	0	0	
*Sulphur Springs, Lake	17,747	15,110	85	-412	-2	-2,637	-15	
Cypress Springs, Lake	66,756	61,863	93	-940	-1	-2,711	-4	
Bob Sandlin, Lake	190,822	176,191	92	-6,938	-4	-8,038	-4	
Caddo, Lake	29,898	29,898	100	0	0	0	0	
Martin, Lake	75,726	65,632	87	-3,384	-4	1,497	2	
Monticello, Lake	34,740	34,740	100	830	2	0	0	
Fork Reservoir, Lake	605,061	542,884	90	-16,043	-3	-36,703	-6	
O the Pines, Lake	241,363	231,768	96	-18,136	-8	-9,595	-4	
Cedar Creek Reservoir in Trinity	644,686	586,626	91	-14,907	-2	-58,060	-9	
Athens, Lake	29,503	27,986	95	0	0	-1,517	-5	
Palestine, Lake	367,303	327,365	89	-8,676	-2	-39,938	-11	
Tyler, Lake	72,073	65,068	90	-1,417	-2	-3,305	-5	
Murvaul, Lake	38,285	33,988	89	-1,222	-3	654	2	
Jacksonville, Lake	25,670	25,381	99	-219	-1	1,640	6	
Nacogdoches, Lake	39,522	36,802	93	-750	-2	3,606	9	
Houston County Lake	17,113	16,945	99	-168	-1	1,400	8	
Sam Rayburn Reservoir	2,857,077	2,527,986	88	-126,173	-4	-27,337	-1	
Toledo Bend Reservoir (Texas)	2,236,450	1,874,660	84	-45,760	-2	-39,360	-2	
Toledo Bend Reservoir (TX & LA)	4,472,900	1,874,660	42	-45,760	-1	-39,360	-1	
*Livingston, Lake	1,785,348	1,785,348	100	0	0	0	0	
B A Steinhagen Lake	66,961	60,970	91	-304	-0	4,717	7	
Conroe, Lake	410,988	394,666	96	-12,875	-3	12,825	3	
TOTAL	9,988,161	9,056,946	91	-353,921	-4	-202,862	-2	
TRANS-PECOS								
Red Bluff Reservoir	151,110	125,227	83	277	0	-9,473	-6	
TOTAL	151,110	125,227	83	277	0	-9,473	-6	
EDWARDS PLATEAU								
Oak Creek Reservoir	39,210	18,651	48	-939	-2	8,908	23	
E V Spence Reservoir	517,272	52,483	10	-958	-0	6,340	1	
O C Fisher Lake	119,445	17,753	15	-536	-0	-3,121	-3	
*O H Ivie Reservoir	554,340	119,996	22	-3,190	-1	49,144	9	

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS								
Name of Lake or Reservoir	Conservation Storage Capacity (acre-feet)	Conservation Storage end of October 2016		Change since end of September 2016		Change since end of October 2015		
		(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)	
<i>(Edwards Plateau continued)</i>								
Twin Buttes Reservoir	182,454	17,743	10	406	0	8,051	4	
Nasworthy	9,615	7,721	80	-315	-3	606	6	
Brady Creek Reservoir	28,808	17,112	59	175	1	7,849	27	
Buchanan, Lake	816,904	813,434	100	-1,302	-0	211,648	26	
Inks, Lake	13,962	12,982	93	45	0	60	0	
Lyndon B Johnson, Lake	115,249	110,331	96	0	0	426	0	
*Amistad Reservoir (Texas)	1,840,849	1,532,081	83	9,695	1	361,362	20	
*Amistad Reservoir (TX & Mexico)	3,275,532	1,532,081	47	9,695	0	361,362	11	
TOTAL	4,238,108	2,720,287	64	3,081	0	651,273	15	
SOUTH CENTRAL								
Travis, Lake	1,113,348	1,094,263	98	-19,085	-2	186,048	17	
*Austin, Lake	23,972	22,772	95	46	0	-309	-1	
Somerville Lake	147,104	147,104	100	0	0	0	0	
Canyon Lake	378,781	377,876	100	-905	-0	-905	-0	
Medina Lake	254,823	238,481	94	-7,921	-3	77,665	30	
*Coletto Creek Reservoir	31,040	25,495	82	-1,687	-5	-3,528	-11	
TOTAL	1,949,068	1,905,991	98	-29,552	-2	258,971	13	
UPPER COAST								
Houston, Lake	120,686	120,686	100	0	0	0	0	
Texana, Lake	159,566	146,949	92	-8,960	-6	-12,617	-8	
TOTAL	280,252	267,635	95	-8,960	-3	-12,617	-5	
SOUTHERN								
Choke Canyon Reservoir	662,820	275,507	42	-6,349	-1	48,693	7	
Corpus Christi, Lake	256,961	239,789	93	21,903	9	18,410	7	
*Falcon Reservoir (Texas)	1,551,007	542,560	35	-10,525	-1	-194,702	-13	
*Falcon Reservoir (TX & Mexico)	2,646,817	542,560	20	-10,525	-0	-194,702	-7	
TOTAL	2,470,788	1,057,856	43	5,029	0	-127,599	-5	
STATEWIDE TOTAL								
STATEWIDE TOTAL	31,242,774	26,058,846	83	-485,239	-2	582,664	2	
Elephant Butte Reservoir	1,973,358	128,628	7	-3,140	-0	-54,096	-3	

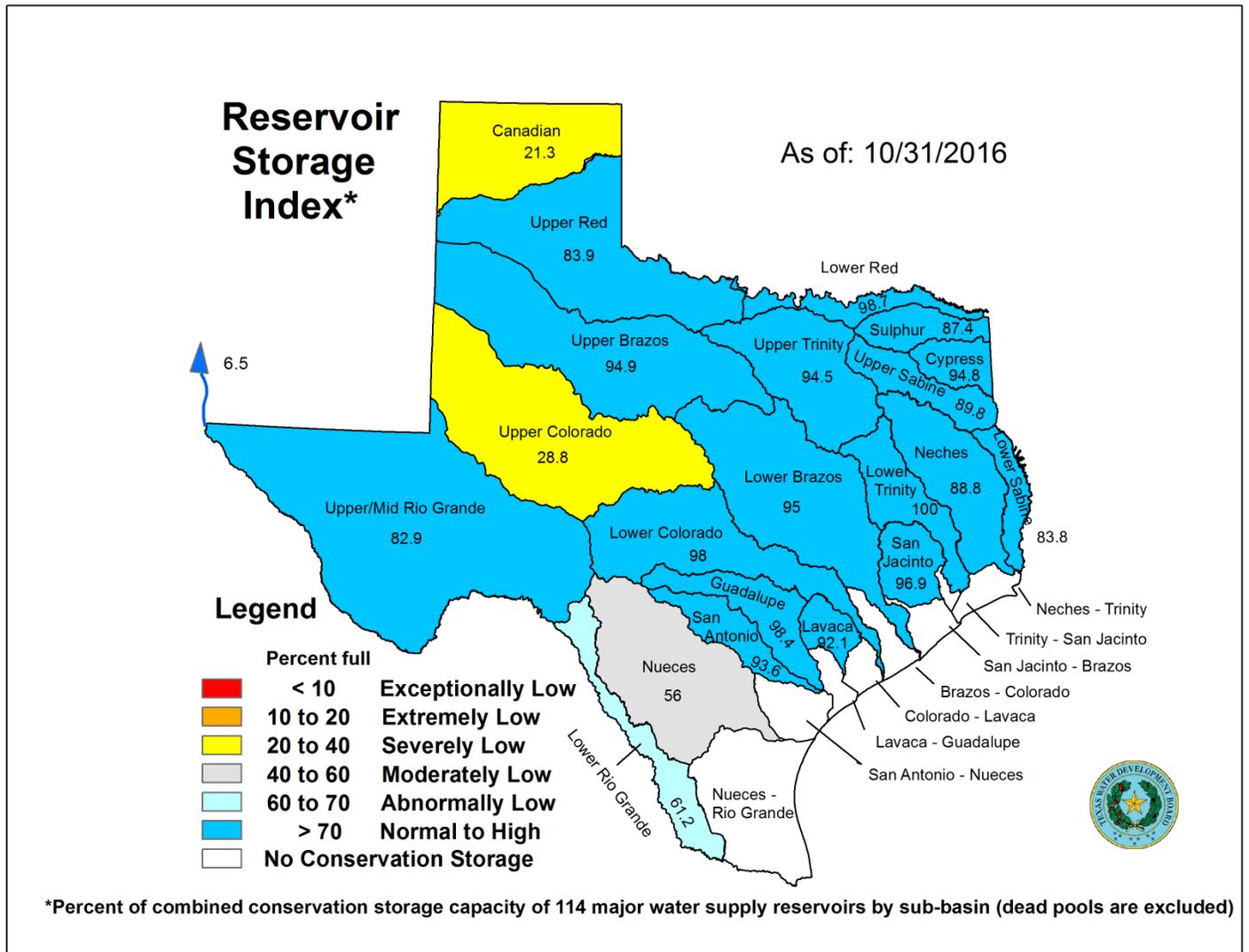
* Conservation volume is used as conservation storage capacity because the dead storage is unknown.

**Monthly and yearly changes do not include reservoirs that did not have data in last monthly or last year, respectively.

Note:

Conservation storage capacity is the space available to store water above the lowest outlet and below the top of conservation pool, or normal maximum operating level. Conservation storage refers to the volume of water held within the conservation storage space. Not included is any water in flood control storage (above the top of conservation pool or normal maximum operating level) or any water in the dead storage. Conservation storage percentage is based on the conservation storage capacity of the reservoir and the conservation storage in the reservoir on date shown. Percent change is given by $100 * (\text{current conservation storage} - \text{past conservation storage}) / \text{conservation storage capacity}$. Figures shown are for the Texas share of conservation storage in all reservoirs.

OCTOBER 2016 RESERVOIR CONDITIONS



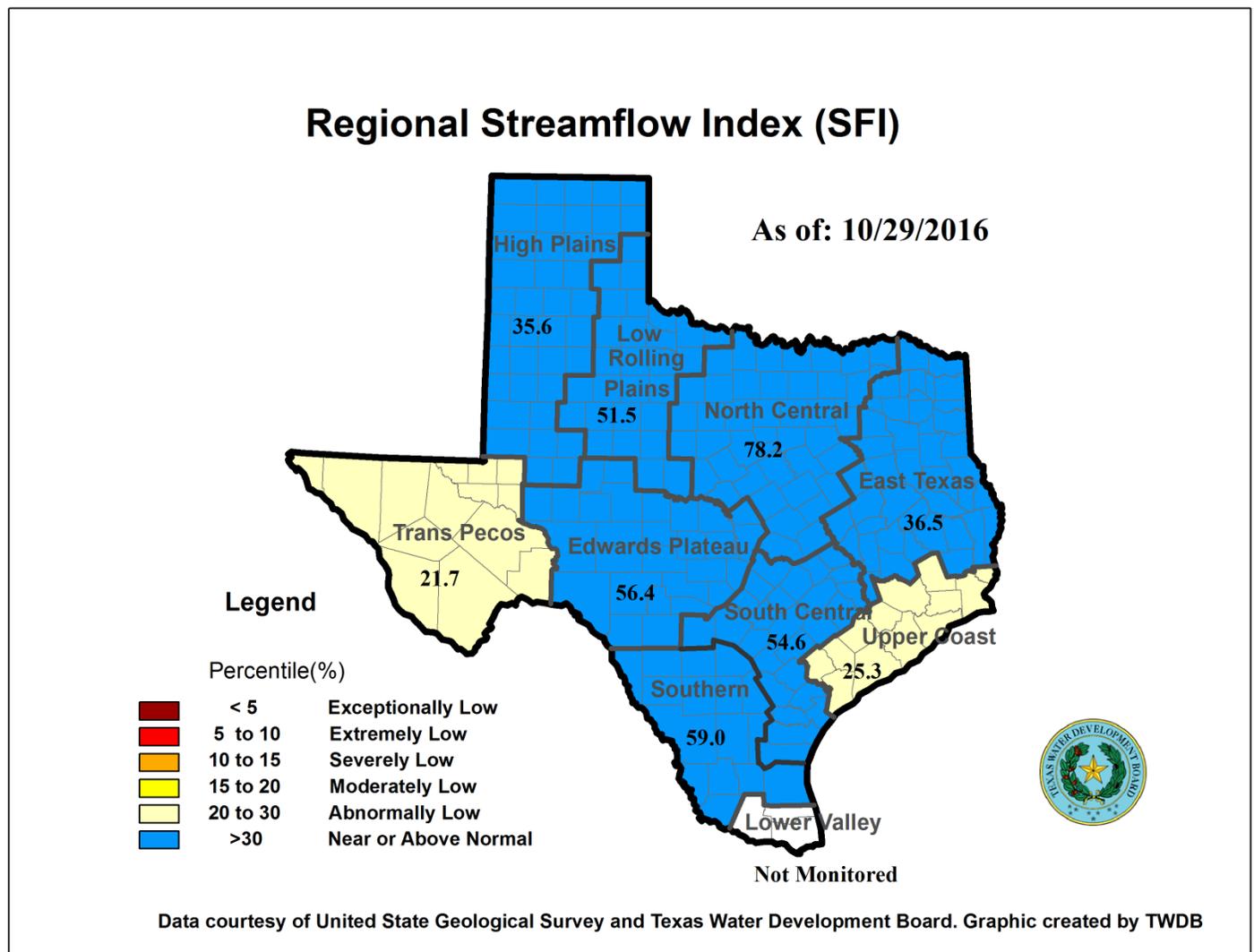
*Reservoir Storage Index is defined as the percent full of conservation storage capacity.

OCTOBER 2016 STREAMFLOW CONDITIONS

The computed 30-day mean flow status for 29 reporting index stations monitored this month is presented below. Mean flow increased at five index stations and decreased at 24 stations.

Streamflow Status	Number of Stations
Near or Above Normal (>30%)	20
Abnormally Low (20-30%)	3
Moderately Low (15-20%)	4
Severely Low (10-15%)	1
Extremely Low (5-10%)	1
Exceptionally Low (<5%)	0

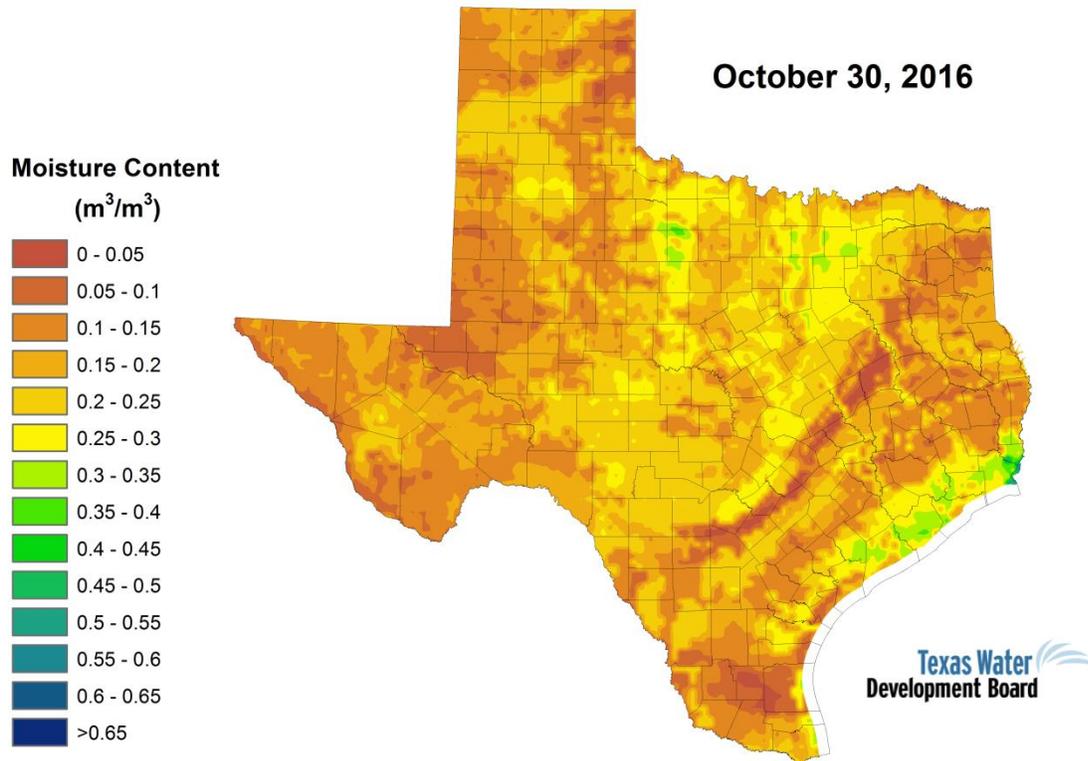
On a regional basis, as shown below, flows at index stations were abnormally low in the Trans-Pecos and Upper Coast regions but near or above normal in all other seven regions. Streamflow in the Lower Valley region is not monitored.



*Streamflow Index is defined as the percentile flow that exceeds a given percent of observed flows.

OCTOBER 2016 SOIL MOISTURE CONDITIONS

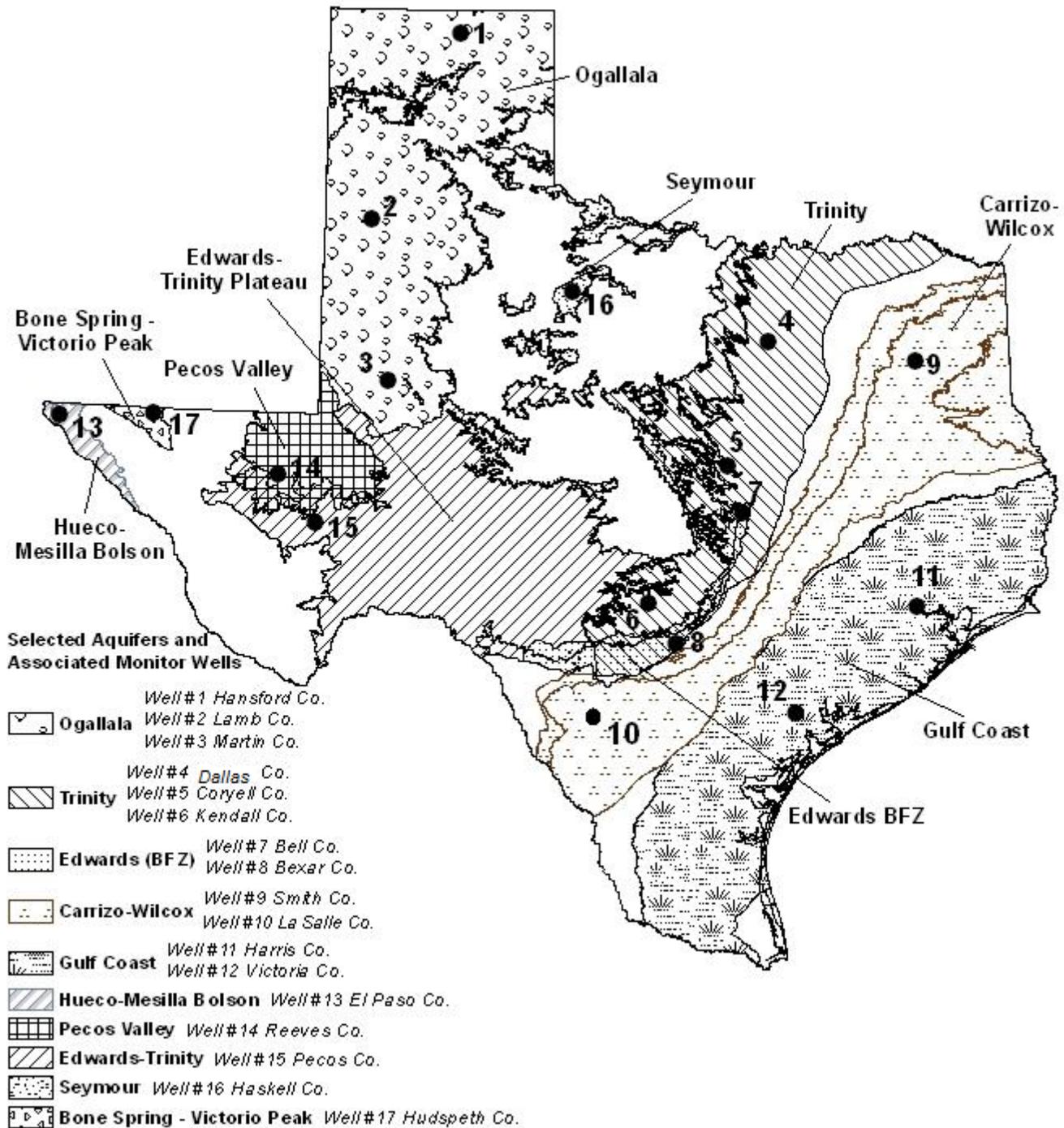
Soil Moisture Condition



Data from NASA Soil Moisture Active Passive (SMAP) Level 4 - Model - Value Added Version 2
Soil moisture content is shown as volume of water per unit volume of bulk soil. Root zone: 0 to 1 meter depth.

The soil moisture pattern across the state for October showed higher amounts of soil moisture in upper coast and north-central regions, as depicted by soil moisture content values over 0.3. Much of the state had very low values of soil moisture with the lowest values (less than 0.1) observed in South Texas, west Texas, the northeastern Panhandle/High Plains, and along a belt extending from the northeast to the southwest, overlying the Carrizo-Wilcox outcrop.

OCTOBER 2016 GROUNDWATER LEVELS IN OBSERVATION WELLS



October 2016

Water-level measurements were available for all 17 key monitoring wells in the state. Water levels rose in eight monitoring wells since the beginning of October, ranging from an increase of 0.05 feet in the Dallas County Twin-Mountains Trinity Aquifer well to 3.82 feet in the Pecos County Edwards-Trinity (Plateau) Aquifer well. Water levels declined in nine monitoring wells, ranging from a decline of 0.10 feet in the Lamb County Ogallala Aquifer well and Martin County Ogallala Aquifer well to 3.60 feet in the Bexar County Edwards (Balcones Fault Zone) Aquifer well. The J-17 well in San Antonio recorded a water level of 56.31 feet below land surface or 674.69 feet above mean sea level. There are no restrictions currently in place for the San Antonio portion of the Edwards (Balcones Fault Zone) Aquifer, with water levels at 14.69 feet above the Stage I critical management level.

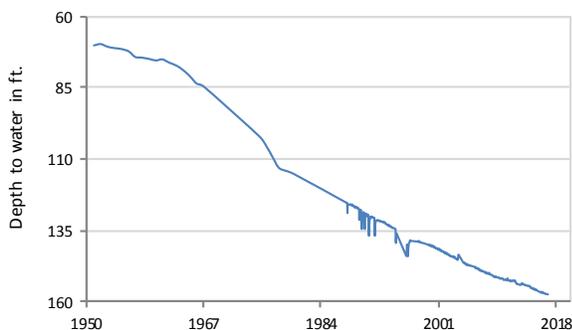
*IDs used in this publication on the aquifer map to indicate the monitoring well location (IDs 1 - 17) are different than the TWDB's six- or seven-digit state well identification number.

Monitoring Well	October	September	Month Change	Year Change	Historical Change	First Measured
(1) Hansford 0354301	157.35	157.23	-0.12	-0.82	-87.23	1951
(2) Lamb 1053602	147.01	146.91	-0.10	-0.89	-118.84	1951
(3) Martin 2739903	144.82	144.72	-0.10	-2.50	-39.93	1964
(4) Dallas 3319101	494.44	494.83	0.05	0.32	-272.78	1954
(5) Coryell 4035404	515.86	515.44	0.58	0.20	-222.86	1955
(6) Kendall 6802609	126.60	127.16	0.56	9.94	-66.60	1975
(7) Bell 5804816	121.38	120.25	-1.13	0.95	2.13	2008
(8) Bexar 6837203	56.31	52.71	-3.60	19.90	-9.67	1932
(9) Smith 3430907	435.14	435.65	0.51	3.43	-135.14	1987
(10) La Salle 7738103	457.73	458.83	1.10	18.24	-204.66	2003
(11) Harris 6514409	192.23	191.51	-0.72	-1.96	-56.73*	1947**
(12) Victoria 8017502	34.45	34.18	-0.27	1.03	-0.45	1958
(13) El Paso 4913301	295.54	294.59	-0.95	-0.35	-63.64	1964
(14) Reeves 4644501	163.14	162.95	-0.19	-5.21	-71.05	1952
(15) Pecos 5216802	208.45	212.27	3.82	8.35	38.43	1976
(16) Haskell 2135748	46.60	46.72	0.12	1.23	-3.60	2002
(17) Hudspeth 4807516	149.57	152.92	3.35	-3.36	-45.65	1966

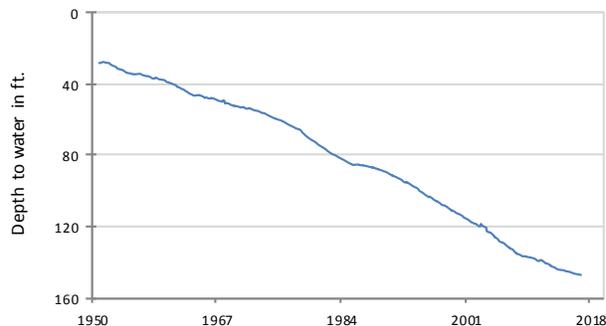
*Change since the original measurement of 135.5 feet below land surface in 1947 (**measurement not shown on the hydrograph)

OCTOBER 2016 GROUNDWATER LEVELS IN OBSERVATION WELLS

(1) State Well ID 03-54-301
Near Spearman, Hansford County
Ogallala Aquifer



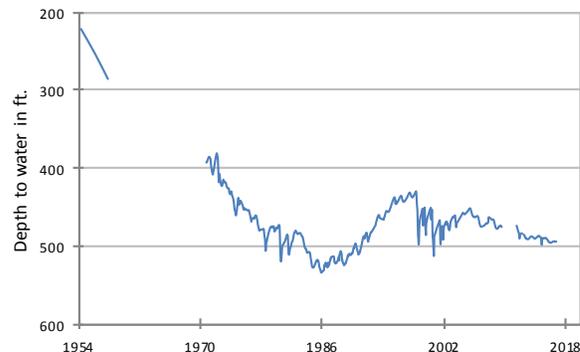
(2) State Well ID 10-53-602
Near Earth, Lamb County
Ogallala Aquifer



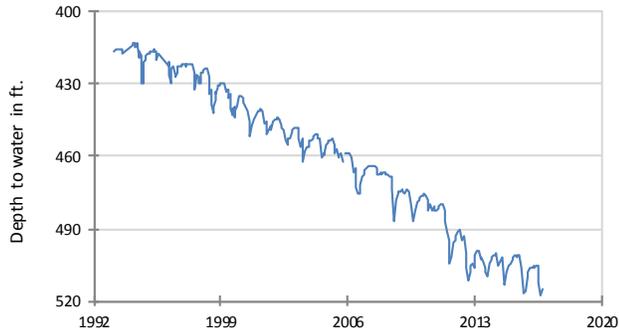
(3) State Well ID 27-39-903
Northwest Martin County
Ogallala Aquifer



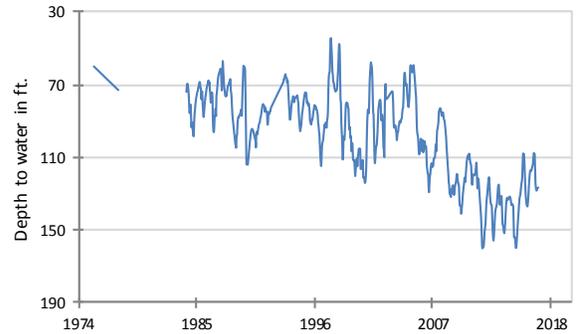
(4) State Well ID 33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer



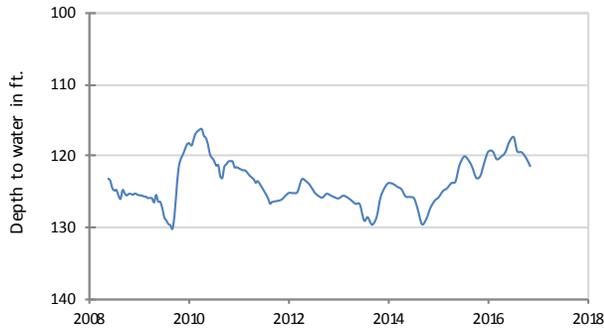
**(5) State Well ID 40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer**



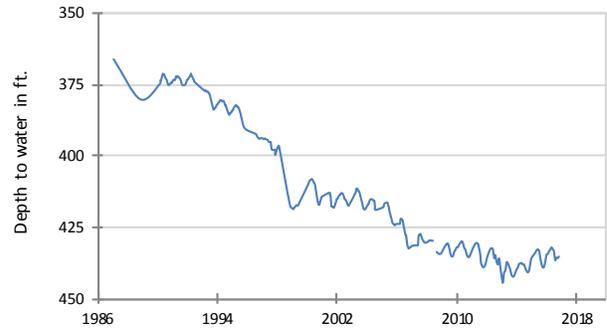
**(6) State Well ID 68-02-609
Waring, Kendall County
Cow Creek Formation-Trinity Aquifer**



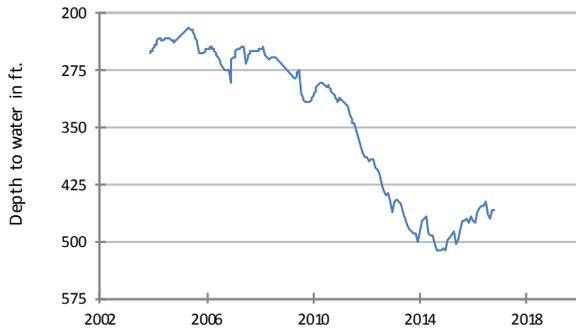
**(7) State Well ID 58-04-816
Near Salado, Bell County
Edwards (Balcones Fault Zone) Aquifer**



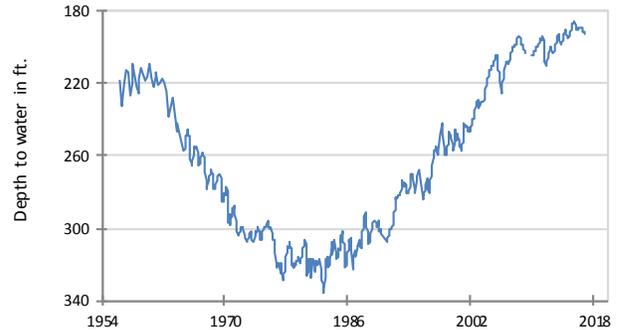
**(9) State Well ID 34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer**



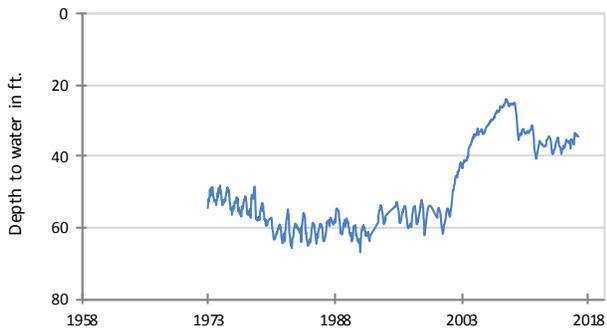
**(10) State Well ID 77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer**



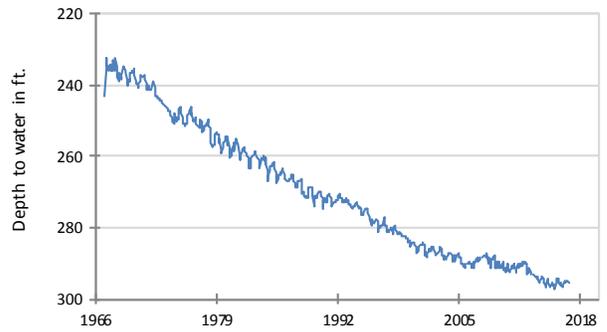
**(11) State Well ID 65-14-409
Alief, Harris County
Evangeline Formation-Gulf Coast Aquifer**



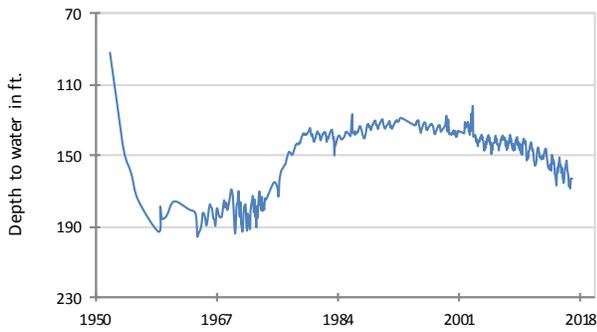
(12) State Well ID 80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



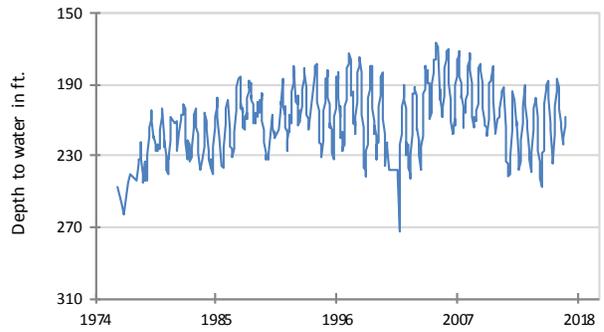
(13) State Well ID 49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolson Aquifer



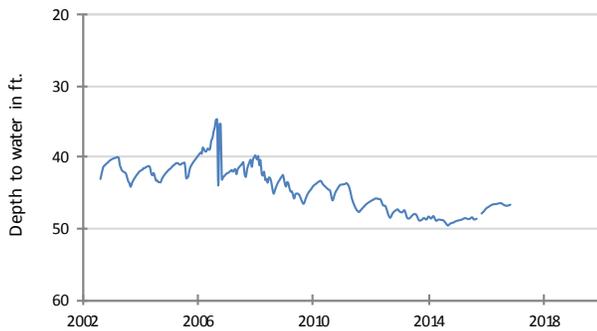
(14) State Well ID 46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



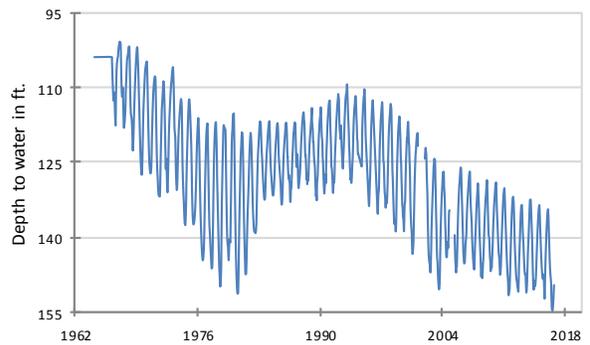
(15) State Well ID 52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



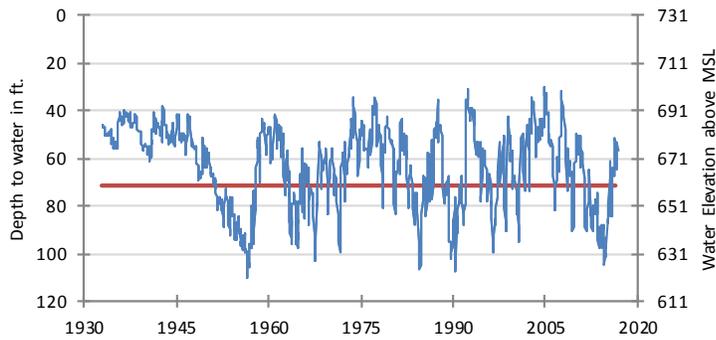
(16) State Well ID 21-35-748
Near O'Brien, Haskell County
Seymour Aquifer



(17) State Well ID 48-07-516
Dell City, Hudspeth County
Bone Spring - Victorio Peak Aquifer



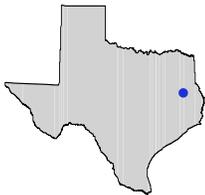
**(8) State Well ID 68-37-203 (J-17)
In San Antonio, Bexar County
Edwards (Balcones Fault Zone) Aquifer**



The late October water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, elevation 731 feet above mean sea level, was 56.31 feet below land surface, or 674.69 feet above mean sea level. This was 3.60 feet below last month's measurement, 19.90 feet above last year's measurement, and 9.67 feet below the initial measurement recorded in 1932.



***** Water levels below the red line indicate periods in which Edwards Aquifer Authority Stage I drought restrictions are in effect. *****



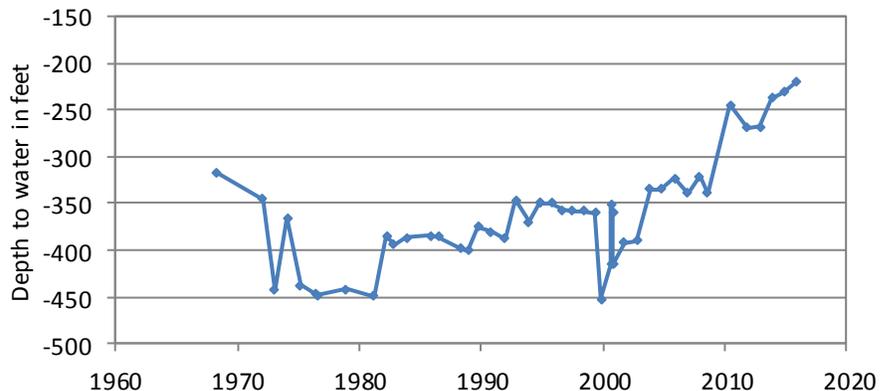
HYDROGRAPH OF THE MONTH

Each month this space features a new hydrograph (marked with the • symbol on the map) depicting different aquifers and their conditions in Texas.

Carrizo - Wilcox Aquifer

Well #3727506, 580 feet deep
Public Supply, Western Nacogdoches County

The Carrizo-Wilcox Aquifer is a major aquifer extending from the Louisiana border to the border of Mexico in a wide band adjacent to and northwest of the Gulf Coast Aquifer. It consists of the Wilcox Group and the overlying Carrizo Formation of the Claiborne Group. The aquifer is primarily composed of sand locally interbedded with gravel, silt, clay, and lignite. The Carrizo-Wilcox Aquifer reaches 3,000 feet in thickness, with the freshwater saturated thickness of the sands averaging 670 feet. In the deeper subsurface portions of the aquifer, high iron and manganese exceed secondary drinking water standards. The groundwater in the outcrop, although hard, is generally fresh and contains less than 500 milligrams per liter of total dissolved solids; whereas groundwater with more than 1,000 milligrams per liter of total dissolved solids is common in the downdip portions of the aquifer. More than half the water usage in the aquifer is designated for irrigation, while municipal supply accounts for another 40 percent.



The first recorded water-level measurement for this public supply well was 317 feet below land surface in 1968. The TWDB began measuring this well in 1972, with a water-level measurement of 345 feet below land surface, and has measured it every year since. The lowest recorded water-level measurement in 1999 was 453 feet below land surface. Since then, the water level has been on a steady increase, rising to the most recent measure of 232.4 feet.